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ABSTRACT

This brochure presents an overview of adaptive computing technology and how it can help people with disabilities participate more fully in society. It defines key terms (such as "disability" and "access barriers") and briefly summarizes provisions of major laws: the Americans with Disabilities Act of 1990, the Technology-Related Assistance Act, and the Vocational Rehabilitation Act of 1973. It then describes typical functional limitations of people with specific disabilities and suggests how adaptive computing technology can be useful. Examples cover the areas of visual impairments, speech impairments, mobility impairments, hearing impairments, and learning disability. The guide concludes with a list of resources for accessing electronic information and possible funding sources. (DB)

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Computers, Technology, and People with Disabilities.

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Computers, Technology, and People with Disabilities

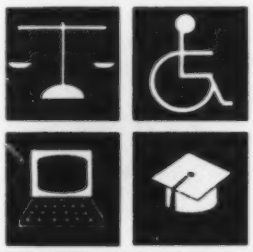
Most of us do one or more things a little differently than other people. Some of us wear eye glasses or contact lenses to see more clearly. Some of us put cushions on our chairs so we can sit more comfortably. If we are in a situation where performing a function in the usual way is difficult, no one thinks much about it if we amend the situation — and our own procedures— to enhance our performances.

Most of us do it so often we don't even consider that we're adapting a situation to fit our own abilities — or disabilities. We're just making things a little more comfortable, a little easier on ourselves.

Using special computer hardware and software to make things easier and more accessible for people with disabilities is what adaptive computing technology is all about. Adaptive computing technology can also make electronic information such as catalogs, reference materials, books, newspapers and other library research materials available to and usable by people with disabilities.

Computers have done much to make work easier and less time consuming for everyone. Adaptive technology offers people with disabilities the opportunity not just to use computers, but to use computers to complete tasks that were previously not possible for them. For example, a computer and a screen reader can give a blind person access to online books and journals. Add a scanner, and this adaptive system provides a way for a blind person to read a printed book.

The ability to use computers, software, adaptive technology and electronic information gives people with disabilities the tools to go to school and hold jobs. This brochure is an overview of adaptive computing technology and how it can help people with disabilities participate in all facets of our society. This brochure will define the important terms, tell you a little bit about the law, and point you toward other valuable resources.



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Terms:

Disability: a physical, emotional or mental impairment that limits one or more of a person's life activities.

Hardware: computers and the associated physical equipment involved in using computers.

Software: data, such as programs, routines, and symbolic languages, essential to the operation of computers.

Adaptive (adapted) computer technology: computer software and hardware that have been adapted to be accessible by people with disabilities, or equipment that has been created to be compensatory tools for people with disabilities.

Access barriers: equipment that prohibits people with disabilities from using standard computer hardware and software.

Compensatory tools: adaptive computing systems that allow people with disabilities to use computers to complete tasks that they would have difficulty doing without a computer. Tasks include: reading, writing, communicating, and accessing information.

Electronic Information: material (books, journals, newspapers, etc.) that is available in electronic formats, such as disks, CD ROMs, and the Internet.

Laws:

Americans with Disabilities Act of 1990

There are various laws that demand equal access and opportunity for people with disabilities. The most recent and comprehensive is the Americans with Disabilities Act, which requires that all private and public schools, libraries, businesses and facilities be accessible to people with disabilities. This law mandates that "reasonable accommodations" be made and specifically mentions the modification of office equipment.

Most importantly, the ADA makes it unlawful to discriminate in all employment and educational practices.

Technology-related Assistance Act

This 1988 act and its 1993 amendments provides federal funding to help states establish programs to promote the provision of technology-related assistance. The purpose of the Tech Act programs is to serve as statewide resources that will increase awareness of the need for adaptive technology, disseminate information about adaptive technology, and facilitate the availability of adaptive technology.

For more information on the Tech Act office in your state, contact RESNA at (202) 587-1199.

Vocational Rehabilitation Act of 1973

This act prohibits discrimination on the basis of disability and applies to any program that receives federal financial support. Section 504 of this Act is aimed at making educational programs and facilities accessible to all students. Most colleges have ADA and 504 Compliance officers. Many also have Disability Support Services Offices.

Section 508 of this Act, also called the "electronic curb cuts" legislation, requires that electronic office equipment purchased through federal procurement meet disability access guidelines.

Adaptive Technology:

These disability categories describe the functional limitation a person might have. Various technologies that would make it possible for that person to accomplish specific tasks are then suggested.

Visual Impairments

This functional limitation includes people who have low vision and people who are blind. Barriers are inability to see the screen and keys, orient on the keyboard, and read print-outs, as well as the inability to read and write printed information.

Typical Strategy:

A blind student tape records lectures and scans assignments into his computer. Some scanned material can be read with a screen-reading program and speech synthesizer. Some will be converted to Braille and read with a Braille embosser and printer. The student will use acomputer and modem to access information from the library.

Speech Impairments

There are no barriers to computer use for people with speech impairments, but there are several compensatory strategies.

Typical Strategy:

One student uses a laptop computer with augmentative communication software to talk with others. This streamlined system allows the student to ask questions and give opinions in class. Augmentative communication systems use speech output, visual displays and computer print-outs.

Mobility Impairments

This functional limitation includes people who have limited or no use of their hands. Barriers are inability to use a standard keyboard and handle disks and print-outs. Difficulties include inability to write, hold books or papers and turn pages.

Typical Strategy:

A newspaper reporter acquired carpal tunnel syndrome that made it impossible for him to use a standard keyboard. His employer invested in a voice recognition system that allows the reporter to speak stories into a computer. Other input options include on-screen keyboards with optical or ultrasonic pointing devices, and Morse Code with sip and puff switches, enlarged or mini-keyboards, trackballs and joysticks.

Hearing Impairments

While people with hearing problems have little difficulty using computers, adaptive technology can offer various compensatory tools.

Typical Strategy:

An employee at an aerospace company has visual icons on her computer that show error messages. She brings a laptop computer to meetings so that she can read the lips of the speaker as she takes notes. She uses a TT for phone conversations and sends e-mail to many of her colleagues instead of calling them on the phone.

Learning Disabilities

People with learning disabilities sometimes have problems reading information on computer screens. There are several compensatory computing tools that are helpful.

Typical Strategy:

One student with a learning disability uses a software program that shows one line of type on the computer at a time, which makes it easier for her to read the screen. Another student uses a laptop computer with a spell checker and outlining program to take notes in class.

Electronic Information:

Many people would benefit from the ability to do research and have various types of information available through the computers sitting on their desks. For people who have "print handicaps," having the information in electronic format is essential. "Print handicap" refers to the inability to use paper information, generally because of visual impairments, learning disabilities or physical impairments that limit hand use or the ability to get to a library.

Electronic access to catalogs, reference materials, books, newspapers and other library materials makes it possible for people with print handicaps to have information that has previously been denied to them. For example, a blind person can access an online newspaper and read it with the use of a screen reader. A person in a wheelchair might be able to retrieve online research documents from a desktop computer, and save a trip to the library. As libraries and businesses become computerized, they are offering more of their materials in electronic formats that can be read by various adaptive devices.

Computers and other adapted equipment can also be used to disseminate information. People who have access to e-mail have a direct communication link to any other person, institution or business that has an e-mail account.

Resources:

Closing the Gap — Information on microcomputer applications for people with disabilities. (612) 248-3294.

EASI: Equal Access to Software and Information — Information on adaptive technology and information access for people with disabilities. (714) 830-0301 TT: (310) 206-5155. EASI@EDUCOM

HEATH Resource Center — Information about disability issues in postsecondary education. (800) 544-3284 or (202) 939-9320. Also TT. heath@ace.nche.edu

RESNA — Interdisciplinary society for the advancement of rehabilitation through technology. Has list of Tech Act programs in each state. 702-524-6686. kmoore@capcon.net

TRACE Research and Development Center — Information on technology that meets communication and environmental control needs of people with severe disabilities. Also information on adaptive hardware and software. (608) 262-6966. TT: (608) 263-5408. essers@macc.wisc.edu

Funding Sources:

There are numerous agencies that help pay for equipment for people with disabilities. Finding the right funding source takes research. The following sources were selected to help you get started.

Funding Devices and Services in Augmentative and Alternative Communication. Free from: Prentke Romich Company, 1022 Heyl Road, Wooster, OH 44691 800-642-8255; 216-262-1984. A one-page sheet listing organizations and tips for approaching them.

The Many Faces of Funding, Anna Hoffman. Phonic Ear, Inc., 250 Camino Alto, Mill Valley, CA 94941; 415-383-4000. Information pertains mostly to physically disabled and non-speaking people.

The Sloane Report, (Six bimonthly issues) P.O. Box 561689, Miami, Fl 33256; 305-251-2199. List of corporate funding sources available for a fee.

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